

Title (en)

MICROSPHERE-BASED COMPOSITION FOR PREVENTING AND/OR REVERSING NEW-ONSET AUTOIMMUNE DIABETES

Title (de)

ZUSAMMENSETZUNG AUF MIKROKÜGELCHENBASIS ZUR VORBEUGUNG UND/ODER ABWENDUNG EINER NEUERKRANKUNG AN AUTOIMMUNEM DIABETES

Title (fr)

COMPOSITION À BASE DE MICROSPHÈRES DESTINÉE À LA PRÉVENTION ET/OU INVERSION DE NOUVEAUX CAS DE DIABÈTE AUTOIMMUN

Publication

**EP 2982753 A1 20160210 (EN)**

Application

**EP 15174152 A 20090420**

Priority

- US 4603408 P 20080418
- US 4824608 P 20080428
- EP 09732817 A 20090420

Abstract (en)

A method is provided that includes using an antisense approach to reverse and/or delay an autoimmune diabetes condition in vivo . The oligonucleotides are targeted to bind to primary transcripts CD40, CD80, CD86 and their combinations.

IPC 8 full level

**C12N 15/113 (2010.01)**

CPC (source: EP US)

**A61P 1/18** (2018.01 - EP); **A61P 3/10** (2018.01 - EP); **A61P 29/00** (2018.01 - EP); **A61P 37/06** (2018.01 - EP); **A61P 43/00** (2018.01 - EP); **C12N 15/1138** (2013.01 - EP US); **C12N 15/88** (2013.01 - EP US); **C12N 2310/11** (2013.01 - EP US); **C12N 2320/32** (2013.01 - EP US)

Citation (applicant)

- US 5213812 A 19930525 - RUIZ JEAN-MARC [FR]
- US 5417986 A 19950523 - REID ROBERT H [US], et al
- US 4530840 A 19850723 - TICE THOMAS R [US], et al
- US 4897268 A 19900130 - TICE THOMAS R [US], et al
- US 5075109 A 19911224 - TICE THOMAS R [US], et al
- US 5102872 A 19920407 - SINGH MANINDER [US], et al
- US 5384133 A 19950124 - BOYES ROBERT N [US], et al
- US 5360610 A 19941101 - TICE THOMAS R [US], et al
- EP 0248531 A2 19871209 - SOUTHERN RES INST [US]
- US 4904479 A 19900227 - ILLUM LISBETH [DK]
- US 5149543 A 19920922 - COHEN SMADAR [IL], et al
- US 6458387 B1 20021001 - SCOTT TERRENCE L [US], et al
- US 6268053 B1 20010731 - WOISZWILLO JAMES E [US], et al
- US 6090925 A 20000718 - WOISZWILLO JAMES E [US], et al
- US 5981719 A 19991109 - WOISZWILLO JAMES E [US], et al
- US 5599719 A 19970204 - WOISZWILLO JAMES E [US], et al
- US 5578709 A 19961126 - WOISZWILLO JAMES E [US]
- US 2006024240 A1 20060202 - BROWN LARRY R [US], et al
- US 3687808 A 19720829 - MERIGAN THOMAS C JR, et al
- US 4469863 A 19840904 - TS O PAUL O P [US], et al
- US 4476301 A 19841009 - IMBACH JEAN-LOUIS [FR], et al
- US 5023243 A 19910611 - TULLIS RICHARD H [US]
- US 5177196 A 19930105 - MEYER JR RICH B [US], et al
- US 5188897 A 19930223 - SUHADOLNIK ROBERT J [US], et al
- US 5264423 A 19931123 - COHEN JACK S [US], et al
- US 5276019 A 19940104 - COHEN JACK S [US], et al
- US 5278302 A 19940111 - CARUTHERS MARVIN H [US], et al
- US 5286717 A 19940215 - COHEN JACK S [US], et al
- US 5321131 A 19940614 - AGRAWAL SUDHIR [US], et al
- US 5399676 A 19950321 - FROEHLER BRIAN [US]
- US 5405939 A 19950411 - SUHADOLNIK ROBERT J [US], et al
- US 5453496 A 19950926 - CARUTHERS MARVIN H [US], et al
- US 5455233 A 19951003 - SPIELVOGEL BERNARD F [US], et al
- US 5466677 A 19951114 - BAXTER ANTHONY D [GB], et al
- US 5476925 A 19951219 - LETSINGER ROBERT L [US], et al
- US 5519126 A 19960521 - HECHT SIDNEY M [US]
- US 5536821 A 19960716 - AGRAWAL SUDHIR [US], et al
- US 5541306 A 19960730 - AGRAWAL SUDHIR [US], et al
- US 5550111 A 19960827 - SUHADOLNIK ROBERT J [US], et al
- US 5563253 A 19961008 - AGRAWAL SUDHIR [US], et al
- US 5571799 A 19961105 - TKACHUK ZENOVY [SU], et al
- US 5587361 A 19961224 - COOK PHILLIP D [US], et al
- US 5194599 A 19930316 - FROEHLER BRIAN C [US], et al
- US 5565555 A 19961015 - FROEHLER BRIAN C [US], et al
- US 5527899 A 19960618 - FROEHLER BRIAN [US]
- US 5721218 A 19980224 - FROEHLER BRIAN [US]
- US 5672697 A 19970930 - BUHR CHRIS [US], et al
- US 5625050 A 19970429 - BEATON GRAHAM [US], et al
- US 5034506 A 19910723 - SUMMERTON JAMES E [US], et al

- US 5166315 A 19921124 - SUMMERTON JAMES E [US], et al
- US 5185444 A 19930209 - SUMMERTON JAMES E [US], et al
- US 5214134 A 19930525 - WEIS ALEXANDER LUDVIK [US], et al
- US 5216141 A 19930601 - BENNER STEVEN A [CH]
- US 5235033 A 19930810 - SUMMERTON JAMES E [US], et al
- US 5264562 A 19931123 - MATTEUCCI MARK [US]
- US 5264564 A 19931123 - MATTEUCCI MARK [US]
- US 5405938 A 19950411 - SUMMERTON JAMES E [US], et al
- US 5434257 A 19950718 - MATTEUCCI MARK D [US], et al
- US 5470967 A 19951128 - HUIE EDWARD M [US], et al
- US 5489677 A 19960206 - SANGHVI YOGESH S [US], et al
- US 5541307 A 19960730 - COOK PHILLIP DAN [US], et al
- US 5561225 A 19961001 - MADDRY JOSEPH A [US], et al
- US 5596086 A 19970121 - MATTEUCCI MARK [US], et al
- US 5602240 A 19970211 - MESMAEKER ALAIN DE [CH], et al
- US 5610289 A 19970311 - COOK PHILLIP DAN [US], et al
- US 5608046 A 19970304 - COOK PHILLIP DAN [US], et al
- US 5618704 A 19970408 - SANGHVI YOGESH S [US], et al
- US 5623070 A 19970422 - COOK PHILLIP DAN [US], et al
- US 5663312 A 19970902 - CHATURVEDULA PRASAD VENKATA CH [US]
- US 5633360 A 19970527 - BISCHOFBERGER NORBERT [US], et al
- US 5677437 A 19971014 - TENG KELLY [US], et al
- US 5792608 A 19980811 - SWAMINATHAN SUNDARAMOORTHI [US], et al
- US 5646269 A 19970708 - MATTEUCCI MARK D [US], et al
- US 5677439 A 19971014 - WEIS ALEXANDER LUDVIK [US], et al
- US 5539082 A 19960723 - NIELSEN PETER E [DK], et al
- US 5714331 A 19980203 - BUCHARDT OLE [DK], et al
- US 5719262 A 19980217 - BUCHARDT OLE [DK], et al
- US 2004219565 A1 20041104 - KAUPPINEN SAKARI [DK], et al
- US 4981957 A 19910101 - LEBLEU BERNARD [FR], et al
- US 5118800 A 19920602 - SMITH LLOYD M [US], et al
- US 5319080 A 19940607 - LEUMANN CHRISTIAN [CH]
- US 5359044 A 19941025 - COOK PHILLIP D [US], et al
- US 5393878 A 19950228 - LEUMANN CHRISTIAN [CH]
- US 5446137 A 19950829 - MAAG HANS [US], et al
- US 5466786 A 19951114 - BUHR CHRIS A [US], et al
- US 5514785 A 19960507 - VAN NESS JEFFREY [US], et al
- US 5519134 A 19960521 - ACEVEDO OSCAR L [US], et al
- US 5567811 A 19961022 - MISIURA KONRAD [PL], et al
- US 5576427 A 19961119 - COOK PHILIP D [US], et al
- US 5591722 A 19970107 - MONTGOMERY JOHN A [US], et al
- US 5597909 A 19970128 - URDEA MICHAEL S [US], et al
- US 5610300 A 19970311 - ALTMANN KARL-HEINZ [CH], et al
- US 5627053 A 19970506 - USMAN NASSIM [US], et al
- US 5639873 A 19970617 - BARASCUT JEAN-LOUIS [FR], et al
- US 5646265 A 19970708 - MCGEE DANIEL PETER CLAUDE [US]
- US 5658873 A 19970819 - BERTSCH-FRANK BIRGIT [DE], et al
- US 5670633 A 19970923 - COOK PHILLIP DAN [US], et al
- US 5792747 A 19980811 - SCHALLY ANDREW V [US], et al
- US 5700920 A 19971223 - ALTMANN KARL-HEINZ [CH], et al
- WO 9839352 A1 19980911 - IMANISHI TAKESHI [JP], et al
- WO 9914226 A2 19990325 - EXIQON A S [DK], et al
- US 4845205 A 19890704 - HUYNH DINH TAM [FR], et al
- US 5130302 A 19920714 - SPIELVOGEL BERNARD F [US], et al
- US 5134066 A 19920728 - ROGERS THOMAS E [US], et al
- US 5175273 A 19921229 - BISCHOFBERGER NORBERT W [US], et al
- US 5367066 A 19941122 - URDEA MICHAEL S [US], et al
- US 5432272 A 19950711 - BENNER STEVEN A [CH]
- US 5457187 A 19951010 - GMEINER WILLIAM H [US], et al
- US 5459255 A 19951017 - COOK P DAN [US], et al
- US 5484908 A 19960116 - FROEHLER BRIAN [US], et al
- US 5502177 A 19960326 - MATTEUCCI MARK D [US], et al
- US 5525711 A 19960611 - HAWKINS MARY E [US], et al
- US 5552540 A 19960903 - HARALAMBIDIS JIM [AU]
- US 5587469 A 19961224 - COOK PHILLIP D [US], et al
- US 5594121 A 19970114 - FROEHLER BRIAN [US], et al
- US 5596091 A 19970121 - SWITZER CHRISTOPHER [US]
- US 5614617 A 19970325 - COOK PHILIP DAN [US], et al
- US 5645985 A 19970708 - FROEHLER BRIAN [US], et al
- US 5830653 A 19981103 - FROEHLER BRIAN [US], et al
- US 5763588 A 19980609 - MATTEUCCI MARK D [US], et al
- US 6005096 A 19991221 - MATTEUCCI MARK [US], et al
- US 5750692 A 19980512 - COOK P DAN [US], et al
- US 5681941 A 19971028 - COOK PHILLIP DAN [US], et al
- EP 1072679 A2 20010131 - AGILENT TECHNOLOGIES INC [US]
- WO 9712896 A1 19970410 - EPOCH PHARMACEUTICALS INC [US]
- NIELSEN ET AL., SCIENCE, vol. 254, 1991, pages 1497 - 1500
- MESMAEKER, CURRENT OPINION IN STRUCTURAL BIOLOGY, vol. 5, 1995, pages 343 - 355
- USAN M. FREIER; KARL-HEINZ ALTMANN, NUCLEIC ACIDS RESEARCH, vol. 25, 1997, pages 4429 - 4443
- MARTIN ET AL., HELV. CHIM. ACTA, vol. 78, 1995, pages 486 - 504
- KROSCHWITZ, J. I.: "The Concise Encyclopedia Of Polymer Science And Engineering", 1990, JOHN WILEY & SONS, pages: 858 - 859
- ENGLISCH ET AL., ANGEWANDTE CHEMIE, vol. 30, 1991, pages 613

- CROOKE, S. T. AND LEBLEU, B.: "Antisense Research and Applications", 1993, CRC PRESS, article SANGHVI, Y. S.: "chapter 15", pages: 289 - 302
- SUSAN M. FREIER; KARL-HEINZ ALTMANN, NUCLEIC ACIDS RESEARCH, vol. 25, 1997, pages 4429 - 4443
- ENGLISCH ET AL., ANGEWANDTE CHEMIE, vol. 30, 1991, pages 613 - 722
- COOK, ANTICANCER DRUG DESIGN, vol. 6, 1991, pages 585 - 607
- THORNTON ET AL., J IMMUNOL, vol. 164, 2000, pages 183 - 190
- THORNTON ET AL., J EXP MED, vol. 188, 1998, pages 287 - 296
- MEDAROVA ET AL., DIABETES, vol. 54, 2005, pages 1780 - 1788
- PETROVSKY ET AL., CANCER RES, vol. 63, 2003, pages 1936 - 1942
- GMYR ET AL., CELL TRANSPLANT, vol. 10, 2001, pages 109 - 121

Citation (search report)

- [YD] US 2006024240 A1 20060202 - BROWN LARRY R [US], et al
- [Y] WO 0074687 A1 20001214 - ISIS PHARMACEUTICALS INC [US], et al & DATABASE Geneseq [online] 23 March 2001 (2001-03-23), "Human B7-2 mRNA antisense oligonucleotide SEQ ID NO: 79.", XP002541961, retrieved from EBI accession no. GSN:AAF32882 Database accession no. AAF32882 & DATABASE Geneseq [online] 23 March 2001 (2001-03-23), "Human B7-2 mRNA antisense oligonucleotide SEQ ID NO: 80.", XP002541962, retrieved from EBI accession no. GSN:AAF32883 Database accession no. AAF32883 & DATABASE Geneseq [online] 23 March 2001 (2001-03-23), "Human B7-2 antisense oligonucleotide SEQ ID NO: 258.", XP002541963, retrieved from EBI accession no. GSN:AAF33175 Database accession no. AAF33175
- [AP] WO 2008109495 A2 20080912 - MDRNA INC [US], et al & DATABASE Geneseq [online] 27 November 2008 (2008-11-27), "Human CD40 mRNA target sequence for mdRNA, SEQ ID:1306.", XP002541964, retrieved from EBI accession no. GSN:ATO04050 Database accession no. ATO04050
- [Y] PHILLIPS BRETT ET AL: "A microsphere-based vaccine prevents and reverses new-onset autoimmune diabetes.", DIABETES JUN 2008, vol. 57, no. 6, 26 February 2008 (2008-02-26), pages 1544 - 1555, XP002541959, ISSN: 1939-327X
- [A] MACHEN ET AL: "Antisense oligonucleosides down-regulating costimulation confer diabetes-preventive properties to nonobese diabetic mouse dendritic cells", JOURNAL OF IMMUNOLOGY, AMERICAN ASSOCIATION OF IMMUNOLOGISTS, US, vol. 173, 1 January 2004 (2004-01-01), pages 4331 - 4341, XP008103972, ISSN: 0022-1767
- [AP] GIANNOUKAKIS NICK ET AL: "Toward a cure for type 1 diabetes mellitus: diabetes-suppressive dendritic cells and beyond.", PEDIATRIC DIABETES JUN 2008, vol. 9, no. 3 Pt 2, June 2008 (2008-06-01), pages 4 - 13, XP002541960, ISSN: 1399-5448

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK TR

DOCDB simple family (publication)

**WO 2009129544 A1 20091022;** AU 2009237577 A1 20091022; AU 2009237577 B2 20140605; CA 2720675 A1 20091022; CA 2720675 C 20190827; CN 102007213 A 20110406; CN 102007213 B 20140806; DK 2281042 T3 20151109; DK 2982753 T3 20180903; EP 2281042 A1 20110209; EP 2281042 B1 20150826; EP 2982753 A1 20160210; EP 2982753 B1 20180606; ES 2554168 T3 20151216; ES 2686708 T3 20181019; HK 1221261 A1 20170526; JP 2011519365 A 20110707; JP 2015007133 A 20150115; JP 2017036334 A 20170216; JP 2018197274 A 20181213; JP 5685182 B2 20150318; MX 2010011508 A 20110503; PL 2281042 T3 20160129; PL 2982753 T3 20190329; US 2009291145 A1 20091126; US 8022046 B2 20110920

DOCDB simple family (application)

**US 2009041167 W 20090420;** AU 2009237577 A 20090420; CA 2720675 A 20090420; CN 200980113547 A 20090420; DK 09732817 T 20090420; DK 15174152 T 20090420; EP 09732817 A 20090420; EP 15174152 A 20090420; ES 09732817 T 20090420; ES 15174152 T 20090420; HK 16109472 A 20160809; JP 2011505257 A 20090420; JP 2014208623 A 20141010; JP 2016221840 A 20161114; JP 2018177118 A 20180921; MX 2010011508 A 20090420; PL 09732817 T 20090420; PL 15174152 T 20090420; US 42690409 A 20090420